

## ABSTRACT

[0070] A biological tissue sample is scanned in a single pass to produce an image and corresponding optical-density data. A conventional computerized algorithm is used to identify, isolate and produce segmented images of nuclei contained in the image. The OD values corresponding to nuclear chromatin are used to identify numerical patterns known to have statistical significance in relation to the health condition of the biological tissue. These patterns are analyzed to detect pre-neoplastic changes in histologically normal-appearing tissue that suggest a risk for the development of a pre-malignant and a potentially malignant lesion. This information is then converted to a visually perceptible form incorporated into the image of the tissue sample and is displayed for qualitative analysis by a pathologist.